

ENT h2-24 Development of Improved Larvicides and Other Materials and
Methods for the Control of Screw-Worms and Fleeceworms

1. Tests with Dursban as a screw-worm larvicide.

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Because Dursban appears to be an unusually effective material for use in the control of Boophilus spp., it was decided to undertake preliminary tests with it as a screw-worm larvicide. In laboratory in vitro tests conducted by M. M. Crystal, Dursban was lethal to young screw-worm larvae at 10 ppm but not at 1 ppm, thus indicating only moderate toxicity to this species.

A trial was conducted with artificially infested cattle at Campo Cotaxtla, Veracruz, Mexico, during the week of June 12. Yearling bulls were infested with newly hatched larvae on 3 successive days so that the animals were infested with 2-, 3-, or 4-day-old larvae on the day of treatment. All of the infestations were established on the upper neck, just in front of the shoulder of the animal. The methods and techniques were similar to those described by Drummond et al. (1967) (J. Econ. Entomol. 60(1): 199-200), except that no "hidden" wounds were established. As shown in Table 11, 3 concentrations of Dursban were compared with a standard treatment, 0.25% coumaphos (as Asuntol). The calves were sprayed on June 16 with 8 liters of spray material/animal applied at a pressure of approximately 250 lb/sq. in. The entire body of the animal was wet with the spray, but care was used to avoid overtreating the wounds and only one pass of the spray gun was made over the wound. The cattle were examined at 24 hr posttreatment, and all surviving larvae were treated with Negasunt (a proprietary dust containing a mixture of trichlorfon and coumaphos with a bacteriostat added).

As the data in Table 11 indicate, 0.025% Dursban killed only part of the larvae 2-4 days of age. When Dursban was used at concentrations of 0.05% or 0.1%, there was partial survival of larvae 3 and 4 days of age but not those 2 days of age. The standard treatment was 100% effective against larvae of all ages.

Table 10. Biological control of the face fly by predation on pupae by insects and parasitism of larvae by Heterotylenchus autumnalis.

Farm	Percentage of face fly pupae attacked by					Total (%)
	<u>Staphylinidae</u>		<u>Hymenoptera</u>		<u>Nematode</u>	
	<u>Aleochara</u>	<u>A.</u>	<u>Aphaereta</u>	<u>Eucoilia</u>	<u>H.</u>	
	<u>tristis</u>	<u>bimaculata</u>			<u>autumnalis</u>	
Walstrom	32.83	0.76	0.13	0	18.43	52.15
Blomstrom	0	.02	.84	.12	12.57	13.55

Table 11. Results of treatment of calves with 3 concentrations of Dursban or 0.25% Asuntol.

Calf no.	Age of larvae (days)	Estimated no. of normal larvae	
		Pretreatment	24 hr posttreatment
<u>0.025% Dursban</u>			
355	4	60+	50
363	4	15+	10+
348	3	10+	5+
357	3	15+	3
353	2	10+	15+
<u>0.05% Dursban</u>			
349	4	100	50+
362	4	100+	50+
358	3	50	15+
365	3	100+	all dead
361	2	25	do.
<u>0.1% Dursban</u>			
360	4	50+	25+
364	4	100+	50+
366	3	50	50+
351	2	50+	all dead
367	2	10+	do.
<u>0.25% Asuntol</u>			
350	4	60+	all dead
359	4	30+	do.
356	3	30	do.
352	3	10+	do.
354	2	25	do.

ENT h2-25 Development of Insecticides, Chemosterilants, Attractants,
Biological Agents, and Other Materials and Methods for the
Control of House Flies and Blow Flies

1. Chemosterilants against screw-worm flies.

(Crystal, Meyners, Alvarado)

A. Screening tests.

Tests with 131 compounds yielded viable eggs at tolerated concentrations:

ENT- 501	ENT-51304	ENT-52042-52046 (incl.)
653	51690	52113-52115 (incl.)
767	51691	52117
3557	51824	52119
3688	51840	52120
3691	51890	52160
4596	51911-51915 (incl.)	52193-52197 (incl.)
5905	51924	60247
8582	51941-51943 (incl.)	61006
8680	51945	61058
15226	51947	61083
15227	51951	61106
15355	51955	61109
16976	51960	61120
18371	51964	61121
22677	51972	61123-61130 (incl.)
22958	51974	61131
22960	51978	61133-61144 (incl.)
22965	51979	61146
22967-22969 (incl.)	51981	61147
23040	52019	61150-61152 (incl.)
23042	52022	61156-61161 (incl.)
23044	52024	61163
23046	52027	61168-61174 (incl.)
23049	52028	61177-61184 (incl.)
24983	52032	61186-61189 (incl.)

Ten compounds were chemosterilants in confirmed screening tests:

<u>No oviposition</u>	<u>No viable eggs</u>	<u>No hatch</u>
ENT-60322	ENT-17191	ENT-51869
61149	51969	51873
	61145	61148
	61154	61153